

# XUEDAN MA

Assistant Scientist

Nanophotonics & Biofunctional  
Structures Group

Center for Nanoscale Materials  
Building 440, Room A242  
Phone: 630-252-3716  
Fax: 630-252-4646  
E-mail: xuedan.ma@anl.gov

Argonne National Laboratory  
9700 S Cass Ave., Argonne, IL 60439



## Education

Ph. D. Physical Chemistry, University of Hamburg, Germany  
M. S. Physical Chemistry, University of Siegen, Germany  
B. S. Chemical Engineering, Shanghai Jiao Tong University, China

## Awards and honors

- Postdoctoral Distinguished Performance Awards (PDPA), Los Alamos National Laboratory, 2014
- Ph.D. of Graduation with Distinction (Summa Cum Laude), University of Hamburg, 2011
- Alumni Chemie Siegen (ACS) Student Prize, University of Siegen, 2008
- BOC Special Scholarship, Shanghai Jiao Tong University, 2004
- Xianglu Special Scholarship, Shanghai Jiao Tong University, 2003
- B Degree of People's Scholarship, Shanghai Jiao Tong University, 2002-2003

## Research interests

- Understanding quantum optical properties of semiconductor nanomaterials via temperature dependent single molecule optical spectroscopy and imaging.
- Control and manipulation of nanomaterial optical properties by plasmonic or dielectric nanostructures.
- Development of optical spectroscopy methods for detection of individual nano-objects at the visible and near-infrared wavelengths.

## Professional Experience

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|---|----------------|
| • Center for Nanoscale Materials, Argonne National Laboratory<br>Assistant Scientist                        | 2016 – present |
| • Center for Integrated Nanotechnologies, Sandia National Laboratories<br>Postdoctoral Research Associate   | 2015 – 2016    |
| • Center for Integrated Nanotechnologies, Los Alamos National Laboratory<br>Postdoctoral Research Associate | 2012 – 2015    |

# XUEDAN MA

## Selected Publications

1. O. Wolf, A. A. Allerman, **X. Ma**, J. R. Wendt, A. Y. Song, E. A. Shaner, I. Brener, Enhanced Optical Nonlinearities in the Near-Infrared Using III-Nitride Heterostructures Coupled to Metamaterials, *Appl. Phys. Lett.* **107**, 151108 (2015)
2. **X. Ma**, J. K. S. Baldwin, N. F. Hartmann, S. K. Doorn, H. Htoon, Solid-State Approach for Fabrication of Photostable, Oxygen-Doped Carbon Nanotubes, *Adv. Funct. Mater.* **25**, 6157 (2015)
3. **X. Ma**, N. F. Hartmann, J. K. S. Baldwin, S. K. Doorn, H. Htoon, Room-Temperature Single-Photon Generation from Solitary Dopants of Carbon Nanotubes, *Nat. Nanotechnol.* **10**, 671 (2015)
4. **X. Ma**, O. Roslyak, J. G. Duque, X. pang, S. K. Doorn, A. Piryatinski, D. H. Dunlap, H. Htoon, Influences of Exciton Diffusion and Exciton-Exciton Annihilation on Photon Emission Statistics of Carbon Nanotubes, *Phys. Rev. Lett.* **115**, 017401 (2015)
5. C. J. Hanson, M. R. Buck, K. Acharya, J. A. Torres, J. Kundu, **X. Ma**, S. Bouquin, C. E. Hamilton, H. Htoon, J. A. Hollingsworth, Matching Solid-State to Solution-Phase Photoluminescence for Near-Unity Down-Conversion Efficiency Using Giant Quantum Dots, *ACS Appl. Mater. Interfaces* **7**, 13125 (2015)
6. **X. Ma**, L. Adamska, H. Yamaguchi, S. E. Yalcin, S. Tretiak, S. K. Doorn, H. Htoon, Electronic Structure and Chemical Nature of Oxygen Dopant States in Carbon Nanotubes, *ACS Nano* **8**, 10782 (2014)
7. **X. Ma**, O. Roslyak, F. Wang, J. G. Duque, A. Piryatinski, S. K. Doorn, H. Htoon, Influence of Exciton Dimensionality on Spectral Diffusion of Single-Walled Carbon Nanotubes, *ACS Nano* **8**, 10613 (2014)
8. B. D. Mangum, F. Wang, A. M. Dennis, Y. Gao, **X. Ma**, J. A. Hollingsworth, H. Htoon, Competition between Auger Recombination and Hot-Carrier Trapping in PL Intensity Fluctuations of Type II Nanocrystals, *Small* **10**, 2892 (2014)
9. J. Yoo, **X. Ma**, W. Tang, G.-C. Yi, Metal-Lined Semiconductor Nanotubes for Surface Plasmon-Mediated Luminescence Enhancement, *Nano Lett.* **13**, 2134 (2013)
10. **X. Ma**, A. Mews, T. Kipp, Determination of Electronic Energy Levels in Type-II CdTe-Core/CdSe-Shell and CdSe-Core/CdTe-Shell Nanocrystals by Cyclic Voltammetry and Optical Spectroscopy, *J. Phys. Chem. C* **117**, 16698 (2013)
11. **X. Ma**, K. Fletcher, T. Kipp, M. P. Grzelczak, Z. Wang, A. Guerrero-Martinez, I. Pastoriza-Santos, A. Kornowski, L. M. Liz-Marzan, A. Mews, Photoluminescence of Individual Au/CdSe Nanocrystal Complexes with Variable Interparticle Distances, *J. Phys. Chem. Lett.* **2**, 2466 (2011)
12. Z. Wang, Z. Li, A. Kornowski, **X. Ma**, A. Myalitsin, A. Mews, Solution–Liquid–Solid Synthesis of Semiconductor Nanowires Using Clusters as Single-Source Precursors, *Small*, **7**, 2464 (2011)
13. J. Völker, X. Zhou, **X. Ma**, S. Flessau, H. Lin, M. Schmittel, A. Mews, Semiconductor Nanocrystals with Adjustable Hole Acceptors: Tuning the Fluorescence Intensity by Metal–Ion Binding, *Angew. Chem. Int. Ed.* **49**, 6865 (2010)
14. **X. Ma**, H. Tan, T. Kipp, A. Mews, Fluorescence Enhancement, Blinking Suppression, and Gray States of Individual Semiconductor Nanocrystals Close to Gold Nanoparticles, *Nano Lett.* **10**, 4166 (2010)
15. Z. Li, **X. Ma**, Q. Sun, Z. Wang, J. Liu, Z. Zhu, S. Z. Qiao, S. C. Smith, G. Lu, A. Mews, Synthesis and Characterization of Colloidal Core–Shell Semiconductor Nanowires, *Eur. J. Inorg. Chem.* **2010**, 4325 (2010)

